U.S. Department
of Transportation
**Federal Aviation
Administration**

# SAFO

Safety Alert for Operators

SAFO 10010
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Flight Standards Service
Washington, DC

**http://www.faa.gov/other_visit/aviation_industry/airline_operators/airline_safety/safo**

*A SAFO contains important safety information and may include recommended action. SAFO content should be especially valuable to air carriers in meeting their statutory duty to provide service with the highest possible degree of safety in the public interest. Besides the specific action recommended in a SAFO, an alternative action may be as effective in addressing the safety issue named in the SAFO.*

**Subject:** Magnetic Heading Disturbances Emanating During Ground Operations

**Purpose:** This SAFO alerts operators of Bombardier model CL-600-2B19/2C10/2D15/2D24 (CRJ-200, -700, and -900 series) airplanes, specifically, and generally others, of the need to ensure proper directional heading alignment of slaved compass systems and indications prior to the airplane taking flight.

**Background:** There is a likelihood that significant errors in magnetic directional heading can result from disturbances caused by trucks, tugs, power carts, buildings, and even buried objects, i.e. rebar in the ramp, taxiways, and runways which have the potential to distort the magnetic field. Such disturbance influences are usually easy to identify because a potential object close to the compass system flux detector often located in the airplane wing tips may be visible. However, buried objects are not as easy to identify, and tend to exist at airports where surfaces are reinforced for large and heavy airplanes, as well as other massive support vehicles that traditionally operate at those airports.

Bombardier model airplanes equipped with Rockwell/Collins models AHS-3000/3000A/3000S Attitude Heading Reference System (AHRS), and other airplanes equipped with slaved compass systems with flux detectors located in the wing tips, are susceptible to such disturbances. Whenever the flux detector is near a large, ferrous structure, the displayed heading can be “pulled away” from the actual heading by the magnetic field distortion caused by the structure. In dual systems, this could affect only one of the compass systems, and sometimes result in a heading comparator warning. In other systems no warning may be indicated.

**Discussion:** Either of the following is the suggested corrective action: Prior to entering the takeoff runway for departure, flight crewmembers should:

- Wait until the aircraft has moved out of the distorted magnetic field (or the distorting object has moved away), then fast slave the compass system to return it to the actual heading. If a fast slave switch is not installed, the compass will slave back to the actual heading, but the process will be at the 3-degrees-per-minute slaving rate.
- Switch the AHRS or other compass system into “DG” mode and slew the heading back to the actual heading. When the aircraft is free of the distorted magnetic field, return the system to the slaved mode of operation.

**Recommended Action:** Directors of safety, directors of operations, chief pilots, fractional ownership program managers, training managers, dispatchers, and operators of airplanes equipped with slaved compass systems should familiarize their pilots of the potential for such anomalous behavior when such magnetic disturbances are likely.

**Contact:** Questions or comments pertaining to this SAFO should be directed to Terry Pearsall, NextGen Procedures Integration Group, AJT-28, (202) 385-8730.